

Digging Their Graves WITH THEIR TEETH

How the goats introduced by whalers on Guadalupe Island are eating their way toward extermination

By LAURENCE M. HUEY

GETTING the other fellow's goat is a well-known American expression but a goat getting a goat's goat is another angle on the goat subject. It is especially interesting when the goat is getting the other goat's goat with his teeth! But in a more serious vein let us see how old Bill Goat works in competition with his brother and neighbors when marooned on an oceanic island.

Lying 118° 25' west, by 29° north or approximately 220 miles southwest of San Diego, California, and well off the western coast of Lower California, is Guadalupe Island. This island has figured in the history of the Pacific Coast in no small degree, for during the last 125 years it verily rings with vivid tales of adventure, Russian sealers, American and British whalers and sea rovers, and to close the story, the wails of Mexican felons serving their sentences far from the beaten paths of man. Today this island stands as one of the foremost examples of man-caused devastation, through the introduction of goats. It is not such an extremely large island, for its dimensions are thirty miles in length, six miles in its greatest width, and it has an

altitude of 4500 feet. The shape as shown on the chart reminds one of a sea horse.

But back to the island's resources, starting as near the beginning as possible. Guadalupe's position gave her a unique place in nature to develop in her own way. Remote from the influences of the mainland her plants and birds (she had no indigenous mammals) developed as her weather conditions dictated through eons of time. Her lofty crest is high enough to tap the blanket of fog which prevails over a greater part of the year in that latitude giving moisture to the flora. With such ideal conditions plants grew and specialized and the birds developed into their own respective niches. How the plants first became established is a matter of conjecture, for the island is of volcanic origin, thrust from the bottom of the sea by titanic earthly forces.

We may theorize a bit in this respect and accept as a possible explanation the ocean currents as being responsible for the presence of some plants, as the island is well out in the flow of the north to south flowing Japan current and the possibility of seeds or parts of shrubs being cast upon the shores is without question. Even the higher parts of the island could have had pine cones or acorns lodge during the course of its emergence from the sea, thus establishing the forests on the lofty crest.

The erratic movements of individual birds, which is well-known today, explains their presence on the island and when they found proper food conditions existent they became permanent residents. There can be no question but that there was a well established flora before the advent of birds. Thus then, it takes but little imagination to visualize the island's first occupancy by birds.

A second possible way in which some plants may have been brought to Guadalupe before the coming of man was in the diges-



Above—Although the goats are reputed to have learned to drink sea-water, tracks prove that they visit this spring of fresh water on the eastern slope of Guadalupe Island

It has been estimated that 50,000 goats now inhabit Guadalupe Island. Great herds, gnawing the grass to its very roots, are daily searching the island for food



tive tracts of some of the birds. The phenomenon is well illustrated in our own woods by the spread of the parasite mistletoe. Could this problem be worked out with greater detail, we would find that birds do a very great task in reforestation though but little concrete evidence is present to date on the subject.

Thus we have a picture of the beginning of this renowned island—crowned with a forest of pine, oak and cypress and a verdant chaparral of endemic plants, well populated by more than half a dozen endemic birds, all of which were moulded and blended by the effect of climatic conditions throughout countless ages, happily living on their island home.

The introduction of house mice and



These impoverished trees are all that remains of what was a beautiful forest of native cypress trees. The cypresses have been destroyed by bark-eating goats. Note the trails leading to the spring through the rocky terrain

cats by the Russian sealers, upset this balance to some extent and it was thus that enemies were introduced.

Over the great period of time that the birds had lived on this island no natural enemies were present to be contended with and as a result they fell easy victims. Mice destroyed eggs and cats destroyed birds, though it was those that lived and nested on the ground that suffered the greatest.

They could no doubt have held their own had not a factor of greater potency entered—goats. For this catastrophe the whalers were responsible. Their ships were all propelled by sail and their home ports were either the Atlantic seaboard of New England or the British Isles, with a long, long return journey for fresh supplies. To these men the establishment of a source of fresh meat at such a remote point meant a great deal to their well-being, and when Guadalupe Island was charted during the hey-day of the whale fisheries, goats were liberated.

The goats also found no natural enemies but were held slightly in check by the whalers for a time. However, man's ingenuity devised bigger and faster ships, the whale fisheries became depleted and the goats were left alone and forgotten.

This island with her vernal splendor proved to be a paradise for goats and they increased at an extremely rapid rate. With plenty to eat and no enemies they had life their own sweet way, eating the plant life

faster than it could grow. The balance was now badly upset! The cover for the birds began to disappear as years passed. The birds fell more easily as prey for the cats which had increased with the abundance of easy food. The nesting places of the birds were destroyed. It was just like tearing down the house that Jack built, each factor which had helped the other build up, when torn down, likewise helped in the downfall of its dependent. More than forty species of native plants were destroyed by the goats and directly or indirectly four species of birds were exterminated!

So we have Guadalupe Island briefly pictured in her decline. The struggle for existence ever proceeds—the survival of the strongest whether endemic or exotic,—as the white man has replaced the Indian.

Yet, what has Guadalupe in the future? The goats reached a balance. Exotic European foxtail grasses, inadvertently introduced by man, have replaced the native verdure, and on this the goats feed.

It is claimed that these animals are becoming accustomed to the drinking of salt ocean water. To be sure the writer has seen great bunches of them on the rocks nibbling at the growth of littoral vegetation laid bare at low tide, but he has also seen immense herds trekking towards the only spring of fresh water near the top of the island in the late afternoon where they were

seeking a draught of cool, sweet, water.

"Digging one's grave with one's teeth" is an oft repeated adage and in many cases, true, but an animal population of an island "eating themselves to extermination" is as yet an unheard of event. However, such will be the case if the prophecies of the writer come true and from his most conservative deductions the event is bound to happen. These goats are doing that very thing. The supply of water for the spring is dependent on the fog which is condensed by the trees and falls to the ground where it is concentrated by an impervious stratum of rock, coming to the surface on the east side of the island, but a few hundred feet below the summit. During the past quarter of a century not a new tree has been allowed to start. Each seed of oak, pine, or cypress that falls never succeeds in getting started—some hungry goat nips it in the bud! Thus, they are sealing the doom of the plant life on the island and their own. When the present forest lives its natural span and disappears, thus also will go the condensation of water and all the terrestrial life on the island.

Already bleached white goat bones are numerous, owing to the occasional shortage of food, and during the dry season thirsty goats tax the spring daily to its limit. It is therefore not difficult to visualize what conditions will be in the near future, when the water disappears.